

subsequently became known as that of R. and J. Beck, of Holloway and Cornhill.

After his marriage, in 1856, he lived in Stoke Newington, in which district he resided till his death, and always took an active interest in local affairs. He was one of the livery of the Goldsmiths' Company, and in 1873 was elected Common Councillor for the Ward of Cornhill. He also filled many other important offices connected with the Corporation, and was universally respected, not only as a zealous public servant, but as a man of high character and honesty of purpose.

As one of the leading opticians in the City he was thoroughly acquainted with the scientific aspects of his business, in which he was actively engaged during most of his life. He died of pneumonia after a few days' illness on April 18, 1891.

Mr. Beck was a Fellow of the Royal Microscopical Society, and was elected a Fellow of this Society on February 8, 1861.

HENRY LORD BOULTON was born December 31, 1829. A considerable portion of his life was spent in South America, and for the last twenty years he held the delicate and responsible position of English Consul-General at Venezuela. He was also chief partner in the Venezuelan banking house of H. L. Boulton & Co., of Carácas, who collect and remit to London the monthly instalments for the service of the Venezuelan debt. His death removes a valuable consular officer, whose prestige in Venezuela and knowledge of the country marked him out as specially competent to assist in the settlement of the boundary dispute between that country and Great Britain. Mr. Boulton died November 26, 1891. He was elected a Fellow of this Society January 11, 1889.

FRANZ FRIEDRICH ERNST BRÜNNOW was born in Berlin on November 18, 1821, being the son of Johann Brünnow, a Privy Councillor of State. He attended the Friedrich-Wilhelm Gymnasium from 1829 to 1839, when he entered the Berlin University, attending the lectures of Dirksen, Lejeune-Dirichlet, Ohm, and Steiner in Mathematics, Encke in Astronomy, and Dove in Physics. In 1843 he received the degree of Ph.D., his doctoral thesis being entitled "*De Attractione Moleculari.*" Under the direction of Encke, Brünnow took a zealous part in the astronomical work of the Berlin Observatory, of which his numerous papers in the *Astron. Nachrichten* give evidence. He thus became, early in life, one of the band of earnest astronomers that Encke had gathered round himself at Berlin, including such well-known names as those of Galle, Bremiker, and D'Arrest. It is stated of Brünnow that he was present in the Berlin Observatory when Neptune was first recognised as a planet, and that one of the first notifications of its discovery that reached England was from him.

In the spring of 1847 he removed to Bilk, near Düsseldorf,

on his appointment as Director of the observatory at that place. During his residence here he published his well-known memoir on De Vico's comet, for which he received the Gold Medal of the Amsterdam Academy. It was during this period also that the excellent *Lehrbuch der sphärischen Astronomie* was prepared; the first edition, containing a preface by Encke, was published in Berlin in 1851. This text-book eventually reached a fourth edition, and was translated into English by Main, the Radcliffe Observer at Oxford, in 1860 (this translation contains Part I. of the original work only), into English by Brünnow himself in 1865, and has also, it is stated, been translated into Russian, Italian, and Spanish. These facts speak for themselves as to the estimation in which the *Lehrbuch* was (and is still) held by astronomers. It has perhaps done more to establish the fame of Brünnow than any of his other works.

In 1851 Galle was appointed Director of the Breslau Observatory, and on his departure from Berlin Brünnow took his place at the observatory as first assistant, in which capacity he remained from November 1851 to 1854. It was during this time that he computed the tables of *Flora*, based on Encke's method of procedure as given in the *Berliner Jahrbuch* for 1857. In later years, 1859 and 1869 respectively, tables of *Victoria* and *Iris* followed, the tables of the last-named planet being published at the expense of the Royal Astronomical Society. His work on the theory of these minor planets showed Brünnow to be a calculator of a high order, imbued with the best methods of the modern German school, as was indeed to be expected from a pupil—and evidently a favourite pupil—of Encke.

But a more independent position was soon to be his. In 1854 Brünnow was offered the post of Director of the new observatory in process of erection at Ann Arbor, Michigan, which he accepted. Whilst here he published for a short time a periodical under the title *Astronomical Notices*; it first appeared in Ann Arbor, afterwards in Albany, N.Y., whither he went in 1860 as Associate Director of the observatory in that town. Brünnow returned to Ann Arbor in 1861, and devoted himself to the study of the physical and astronomical constants of the observatory and of the instruments in it. His work on the errors of the circles of the Ann Arbor meridian instrument is perhaps not to be surpassed for thoroughness by anything similar to be found in the whole range of astronomical literature. The investigation was published in the *Astronomical Notices*.

Brünnow's relations to Watson (afterwards his successor at Ann Arbor) were very intimate and cordial. For a long time Watson was the only member of his class, and Brünnow assiduously delivered lectures to that class. It is said that it was at that time a common sight to see the professor talking in an enthusiastic and excited manner to the attentive class of one. When asked why he devoted so much time to so small a class, Brünnow replied: "That class consists of Watson." This high

estimate of his pupil's ability was, as is well known, fully justified by Watson's subsequent career.

In 1863, after the outbreak of the war, Brünnow resigned his position at Ann Arbor, and in 1865, on the death of Sir W. Hamilton, was appointed Andrews Professor of Astronomy in the University of Dublin, and Royal Astronomer for Ireland.

The work of organising the Dunsink Observatory and of placing it on a modern footing fell to the lot of Brünnow, who proved himself thoroughly competent to carry out the needed reforms. Under his direction the South object-glass of $11\frac{3}{4}$ inches aperture was mounted so as to form an excellent equatoreal telescope, and with it he carried out his well-known researches on stellar parallax, which testify so highly to his skill and assiduity as an observer.

The first and second parts of *Astronomical Observations and Researches made at Dunsink* were published by Brünnow in 1870 and 1873 respectively, and contain the results of his work with the South refractor. They are models of what such publications ought to be, lucid in arrangement, clear in exposition, every part of the work given in sufficient detail to enable anyone, with but little trouble, to follow the various steps of the reductions. The stars to which he devoted particular attention were *a Lyræ*, *σ Draconis*, *Groombridge 1830*, *85 Pegasi*, and *Bradley 3077*; and his work on these brought out clearly the high order of accuracy attainable by a skilled observer in observations of differences of declination with a micrometer. The third part of the above-mentioned publication contains some additional observations made by Brünnow during his tenure of office, which were edited and published by his successor, Sir R. Ball, the present Royal Astronomer for Ireland.

In 1874 Brünnow resigned his position in Dublin on account of failing health and eyesight. He retired first to Basle, then in 1880 he removed to Vevey, finally, in 1889, he took up his residence in Heidelberg.

After his departure from Dublin, the weak state of his eyes prevented Brünnow from engaging to any extent in scientific work, and thus he was enabled to give more time to music, of which he was very fond, and for which he possessed a remarkable talent. It is said that he once remarked, with quite too modest a view of his important contributions to astronomy, that he ought to have devoted himself entirely to music.

In March 1857 Brünnow married Rebecca Lloyd, daughter of Rev. Henry P. Tappan, at that time President of Ann Arbor University. Their only son, Rudolf Ernst, is now Professor of Oriental Languages at Heidelberg.

His death was quite unexpected. He had suffered for a long time from weakness of the heart, and was seriously ill in June of last year. He, however, partially recovered, and was making preparations for a journey into Switzerland when he was again taken ill, and died on August 20, 1891, in Heidelberg, at the age

of nearly seventy years. He was elected a Fellow of this Society May 14, 1869.

WILLIAM CHIMMO was born in the year 1828, and entered the Royal Navy in 1841, when only thirteen years old. He obtained the rank of lieutenant in 1850, and of commander in 1864. He served in the first and second China wars, against pirates in Borneo, and for six-and-a-half years was engaged in the *Herald* in the search for Sir John Franklin. Afterwards, as lieutenant of the *Iano*, he led the successful search for the lost expedition of Mr. Gregory and his party in Torres Straits, and assisted in the magnetic observations during the voyage of the *Royal Charter* to Australia. In command of the *Sea Gull* he was engaged in the survey of the west coast of Scotland, and as commander of the *Gannet* in the survey of Trinidad and the exploration of Labrador. He also explored the Sooloo Islands, where he had three officers and two men wounded in the attack upon a nest of pirates, of whom 190 were killed.

From 1856 to 1858 Captain Chimmo was secretary to the Hydrographer of the Admiralty. The greater portion of his life was devoted to the Hydrographic Survey, and he wrote several papers on the result of deep-sea soundings in the Atlantic, on which he was employed. His only communication to this Society was an account of the great shower of meteors on November 14, 1867, which he observed when surveying in the West Indies.

After his retirement from the Navy, with the rank of post-captain, in 1873, he settled at Weymouth, where he died, October 30, 1891, at the age of sixty-four. He was a Fellow of the Linnean, Royal Geographical, and Meteorological Societies. He was elected a Fellow of this Society on November 11, 1859.

ALBERT ESCOTT was born in Somersetshire in 1840, his father being a member of an old county family. His father died in 1845, and in 1851 the son entered the Royal Hospital School, Greenwich, as pupil in the Upper School, which at that time consisted of the sons of naval officers. The first years of his school life were passed under the care of the late Rev. Dr. Hill, and afterwards under that of Mr. John Riddle. In 1855 Mr. Escott was appointed senior pupil teacher in the Upper School, and after three years became assistant master in the Nautical School, and was afterwards second master in Section C. He was appointed head master in 1870, at which time the school was entirely reorganised. In 1874 an important change was made, naval schoolmasters being sent to be trained by Mr. Escott and his assistant at Greenwich, from which certificates were granted, instead of at the training colleges to which naval schoolmasters had been formerly sent. After the death of his former teacher, Mr. John Riddle, Mr. Escott edited the 8th edition of that